



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



(11)

EP 4 068 364 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
14.12.2022 Bulletin 2022/50

(51) International Patent Classification (IPC):
H01L 27/146 (2006.01) *H04N 5/361* (2011.01)
H04N 5/369 (2011.01) *H04N 5/359* (2011.01)

(43) Date of publication A2:
05.10.2022 Bulletin 2022/40

(52) Cooperative Patent Classification (CPC):
H04N 5/361; *H01L 27/14603*; *H01L 27/1461*;
H01L 27/14612; *H04N 5/3591*; *H04N 5/36963*;
H01L 27/14643

(21) Application number: 22162897.7

(22) Date of filing: 18.03.2022

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: 31.03.2021 JP 2021060266

(71) Applicant: **CANON KABUSHIKI KAISHA**
OHTA-KU
Tokyo 146-8501 (JP)

(72) Inventor: **ONUKI, Yusuke**
Ohta-ku, 146-8501 (JP)

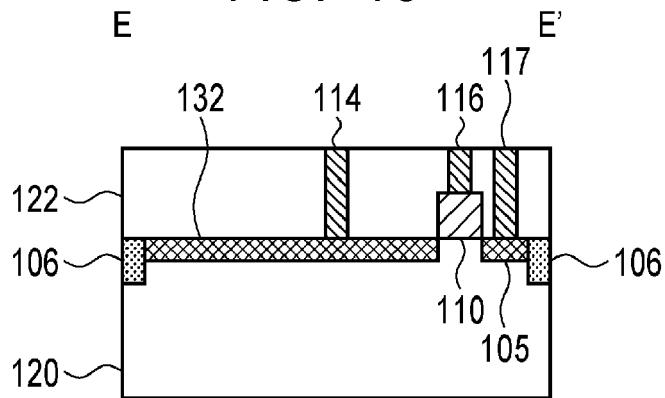
(74) Representative: **TBK**
Bavariaring 4-6
80336 München (DE)

(54) PHOTOELECTRIC CONVERSION DEVICE

(57) Provided is a photoelectric conversion device including a pixel array including a first pixel and a second pixel. The first pixel includes a photoelectric conversion unit including a first semiconductor region of a first conductivity type as a charge accumulation layer and photoelectrically converts incident light to generate a signal

in accordance with the incident light, and the second pixel includes a second semiconductor region of the first conductivity type and a transistor including a first main electrode formed by a third semiconductor region connected to the second semiconductor region and a gate.

FIG. 4C





PARTIAL EUROPEAN SEARCH REPORT

Application Number

EP 22 16 2897

5

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10	A US 2014/027617 A1 (AMIKAWA HIROYUKI [JP]) 30 January 2014 (2014-01-30) * figures 2-4, 11 * ----- A US 2013/076951 A1 (ENDO SUZUNORI [JP]) 28 March 2013 (2013-03-28) * figures 2-5 * ----- A US 2016/006965 A1 (LEE JUN SUK [KR] ET AL) 7 January 2016 (2016-01-07) * figures 2-24 * -----	1, 4-15	INV. H01L27/146 H04N5/361 H04N5/369 H04N5/359
15		1, 4-15	
20		1, 4-15	
25			
30			
35	INCOMPLETE SEARCH		TECHNICAL FIELDS SEARCHED (IPC)
40	The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.		H01L H04N
45	Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C		
50	Place of search Munich	Date of completion of the search 2 November 2022	Examiner Doswald, Daniel
55	1 CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



**INCOMPLETE SEARCH
SHEET C**

Application Number
EP 22 16 2897

5

Claim(s) completely searchable:

1

10

Claim(s) searched incompletely:

4-15

15

Claim(s) not searched:
2, 3

20

Reason for the limitation of the search:

Rule 62a EPC

25

30

35

40

45

50

55

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 22 16 2897

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-11-2022

10	Patent document cited in search report	Publication date		Patent family member(s)	Publication date
15	US 2014027617 A1	30-01-2014	JP	6052622 B2	27-12-2016
			JP	WO2012144181 A1	28-07-2014
			US	2014027617 A1	30-01-2014
			WO	2012144181 A1	26-10-2012
20	US 2013076951 A1	28-03-2013	CN	103022065 A	03-04-2013
			JP	2013069958 A	18-04-2013
			US	2013076951 A1	28-03-2013
25	US 2016006965 A1	07-01-2016	KR	20160005573 A	15-01-2016
			US	2016006965 A1	07-01-2016
			US	2017229500 A1	10-08-2017
30					
35					
40					
45					
50					
55					

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82